

IN THE CLAIMS

The following claim set replaces all prior versions, and listings, of claims in the application:

1. (currently amended) A disposable cartridge for mounting on a blood pump device comprising:

B) a. said cartridge attachable to said blood pump and said cartridge supporting an attached blood passage, wherein the blood pump engages the blood passage when said cartridge is attached to the blood pump, wherein through said blood passage flows blood withdrawn from a patient, and

b. an electronic pressure sensor fixed to the cartridge, where the pressure sensor is arranged to sense a pressure in the blood flow through the blood passage of the cartridge and outputs an electrical signal indicative of the pressure, ~~and~~ wherein the pressure sensor is structurally ~~isolated~~ separated from said blood pump, and wherein said sensor has a fluid passage having an internal diameter substantially the same as an internal diameter of the blood passage.

2. (original) A cartridge as in claim 1 wherein an electrical signal is a voltage level indicative of the pressure.

3. (original) A cartridge as in claim 1 further comprising a blood filter coupled to the blood passage, and the blood passage further includes a blood return line to return blood to the patient.

4. (original) A cartridge as in claim 3 further comprising a filtered fluid passage extending from the filter, and a second pressure sensor in the filtered fluid passages sensing a pressure of filtered fluid flowing through the filtered fluid passage.

5. (original) A cartridge as in claim 1 further comprising pressure sensor housing for the pressure sensor, where the housing includes a smooth tubular channel contiguous with the blood passage and the pressure sensor is mounted flush with a wall of the channel.

6. (previously amended) A cartridge as in claim 1 where the sensor is integrated into the housing of a hemofilter and the hemofilter is mounted on the cartridge.

7. (previously amended) A cartridge as in claim 1, where the pressure sensor and a pump coupling loop of the blood passage are mounted on the cartridge housing and the cartridge detachably attaches to the pump device such that the pump device engages the loop.

8. (previously amended) A cartridge as in claim 7 where the blood passage is formed of transparent material so that the blood flow is visible.

9. (original) A cartridge as in claim 7 wherein the cartridge is disposed of after treatment of the patient.

10. (original) A cartridge as in claim 3 wherein the filter is of a group consisting of a hemodialyzer, hemofilter or hemoconcentrator, and the filter includes an integral pressure sensor embedded in a blood passage wall of the filter.

11. (original) A cartridge in claim 10 where the pressure sensor is in fluid contact with the blood.

12. (original) A cartridge as in claim 4 where the second pressure sensor is embedded in the filter and is in fluid contact with the filtered fluid.

13. (currently amended) A cartridge as claim 1 wherein the pressure sensor is sealed in a pressure sensor housing formed of a biocompatible and flexible material, and the sensor housing includes an integral and flexible membrane in contact with the blood and electronic sensors.

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~~diaphragm to said electrical signal.~~

14. (original) A cartridge as in claim 1 wherein the pressure sensor includes a pressure responsive diaphragm exposed to the blood flow and a mechanical-to-electric transducer coupled to the diaphragm and having an electrical signal output indicative of the pressure of the blood.

15. A cartridge as in claim 14 wherein the mechanical-to-electric transducer includes a strain gain bridge or capacitive element to convert displacement of the diaphragm to said electrical signal.

16. (currently amended) A disposable extracorporeal blood circuit for processing blood from a mammal comprising:

a blood passage having a blood withdrawal port connectable to a withdrawal peripheral blood vessel of the mammal, a blood return port connectable to a return peripheral blood vessel of the patient, and a blood passage between the withdrawal port

and the return port through which blood flows wherein the blood passage has a smooth and continuous wall throughout the passage;

a pressure sensor having a fluid passage having a uniform internal diameter substantially the same as an internal diameter of the blood passage, and said fluid passage having with a fluid inlet or outlet coupled to said blood passage, and a fluid pressure responsive element flush with a wall of the fluid passage,

a blood filter having a blood inlet and a blood outlet both coupled to said blood passage such that the blood flows through said filter, and

a cartridge to which is attached the blood passage, pressure sensor and blood filter, and said housing is detachably mountable to a blood pump, and wherein said cartridge includes an electrical connection for electrically coupling the pressure sensor to the blood pump.

17. (currently amended) A disposable ~~extracorporeal~~ extracorporeal blood circuit as in claim 16 wherein said blood passage includes a tubular withdrawal line connectable to a first catheter inserted into the first peripheral blood vessel and to said pressure sensor, a tubular blood circuit line connecting the pressure sensor and the blood inlet of the filter, and a tubular return line connected to the blood outlet of the filter and connectable to a catheter inserted in said second peripheral blood vessel.

18. (currently amended) A disposable ~~extracorporeal~~ extracorporeal blood circuit as in claim 17 wherein the tubular blood circuit line is connectable to a roller blood pump of the blood pump.

19. (currently amended) A disposable ~~extracorporeal~~ extracorporeal blood circuit as in claim 16 wherein the withdrawal and return peripheral blood vessels are the same blood vessel.

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20. (currently amended) A cartridge as in claim 4 further comprising a third pressure sensor arranged to sense a blood pressure in the return blood passage included with the disposable cartridge.

21. (original) A cartridge as in claim 14 further comprising electrical signal connectors extending from the pressure sensor on the cartridge to a detachable electrical coupling on the blood pump device.
